ARIZONA ANTIQUE RADIO CLUB NEWS

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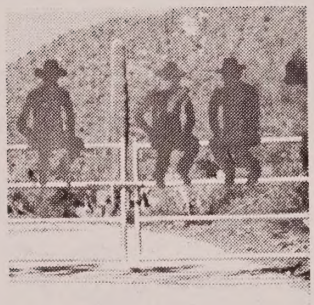

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On the Cover:
"Short-Wave DX'ing - a fine hobby for the whole family" from the cover of the June 1937 issue of *Radio News and Short Wave Radio.*

ARIZONA ANTIQUE RADIO CLUB NEWS

Vol XVIII, No 1 Spring 2001

Arizona Antique Radio Club

The Arizona Antique Radio Club was organized in 1983 for the preservation of the history and artifacts of radio and television, and for the advancement of knowledge and appreciation of radio technology and communication. The Club is a non-profit corporation organized primarily for the mutual assistance of radio devotees and collectors in Arizona. Membership, however, is open to any persons who have an interest in radio and television history, preservation, restoration, and collecting.

Meetings are held from October through May and consist of touring collections, presentations of technical, historical or restoration information, thematic displays of radios and the autobiographical experiences of the members. Our antique radio Swap Meets are scheduled for Spring and Fall meetings. Members of the Board of Directors are elected at the annual business meeting in May. Most meetings are held on Saturdays in the Phoenix and Tucson areas, and when possible, elsewhere within Arizona.

Membership dues are $18 (individual) or $20 (family) per calendar year and provide access to all club benefits including the quarterly issues of the *Radio Club News*. Send dues or membership inquiries to: **Arizona Antique Radio Club, 10513 E. Clinton, Scottsdale, AZ, 85259, phone (602) 860-8951.**

The Arizona Antique Radio Club News is the quarterly publication of the Arizona Antique Radio Club, Inc. It is mailed First Class to current members.

Contributions: submission of articles, news items, fiction, photographs and other materials relating to radio history and collecting are greatly appreciated, particularly if they have an Arizona connection. All members are encouraged to broaden their interest in the hobby by sharing their experiences, opinions, knowledge and observations with the club through its publication. Send materials for publication to **Arizona Antique Radio Club, 2025 E. LaJolla Dr., Tempe, Arizona, 85282-5910. Phone is 480-730-6058.** Email: **lettow@yahoo.com.**

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A.A.R.C. NEWS

OFFICERS CHOSEN

The AARC Board of Directors had a meeting on May 19 to choose officers and discuss pending business. All of the current officers will be holding their positions for another year. Although not a Board member, Dennis Craft volunteered to stay another year as Secretary where he will manage the membership list and mail out the *Radio Club News*.

Recognizing the importance of better communications and use of the internet, the Board appointed Jeff Shields to work on a new club website and to explore other e-mail and internet projects.

The Board will be meeting again in July to rough out next year's schedule and to deal with the big price hike in our insurance coverage.

E-MAIL REMINDER

Please, if you have not received e-mail notices of recent meetings and you would like to, send your e-mail address to Secretary Dennis Craft at dcraft@qwest.net. Also send Dennis any changes you may have in your e-mail or physical addresses.

Approximately two-thirds of the membership has provided e-mail information. We are looking into some new possibilities for this list such as posting it in a secure place so that members can find each other, or be able to post classified ads to the whole club without waiting for a club publication to come out.

Although we will attempt to send announcements by mail to those without e-mail, it is unclear how long we may be able to do this because of the difficulty in finding someone willing to do the job and the cost of printing and postage.

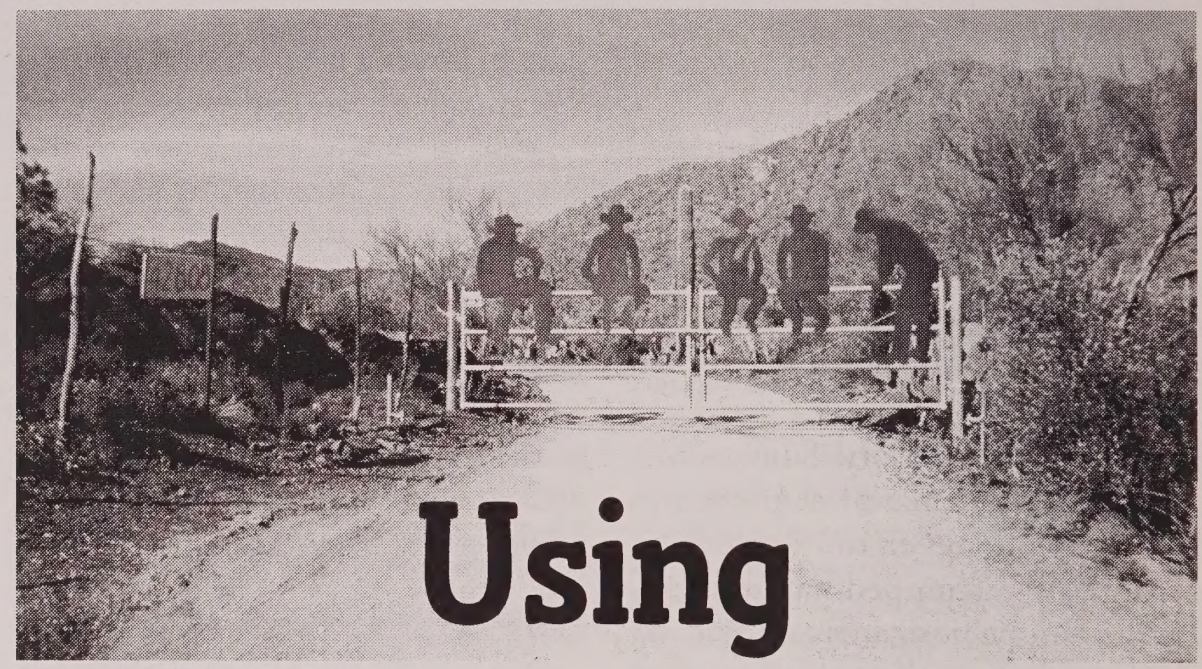
LONG LIST OF NON-RENEWALS

Dennis Craft has compiled an uncommonly long list of members who have not renewed for the 2001 year. While we normally have a number of stragglers, this year the list includes many long time members who have probably forgotten to renew.

Membership dues are the number one source of income for the club and production of the *Radio Club News* and postage are our biggest expenses. This year we are facing a postage increase and a jump in our insurance premium. It costs us very little to increase the number of journals we print, so we get more bang for the buck when we have more members on the rolls.

Please encourage anyone you know to join the club, even if they live in other states; if you know a member who has lapsed, please remind them to renew.

All membership renewals, changes of address, etc., should be sent to Dennis at dcraft@qwest.net or at his home address, 10513 E. Clinton, Scottsdale, AZ 85259.



Using A·R·I·Z·O·N·A

by Rick Barton

Whether one is a native Arizonan or a transplant, we can all agree that Arizona is a special place. But does living here give a little extra advantage for the radio hobbyist?

I was re-reading an old radio hobby magazine where shortwave DXpert Gerry Dexter suggested that one way to get a better response on getting QSL cards from overseas broadcasters is to enclose local post cards or "shack photos" with each reception report.

I know that QSL'ing has been discussed in this publication in the past, so I won't reset the story of QSL'ing here. But Mr. Dexter's advice got me to thinking: could vintage radio collectors or Arizona residents have an advantage here? Large shortwave broadcasters get more mail than they can possibly respond to. Other broadcasters just aren't motivated to take the time and trouble to respond to reception reports. Something has to really grab the attention of the verification signers.

A shack photo of the listener surrounded by unusual radios, like vintage Collins, Hallicrafters or Hammarlund receivers might make the letter stand out. I like to send photos that show my Crosley 66TA bakelite set with a note on the back that identifies it as the radio I heard their broadcasts on.

There are postcards, and then there are postcards! I mean to offend no one, but for my money, the "Greetings from Malvern, Iowa" postcard may be indistinguishable from the "Hubbard, Ohio" postcard. But we have scenery here in Arizona that is unique in all the world. Overseas, there is even a mystique about the

place. I recall that a good friend of mine once fronted a band called The Sidewinders that recorded albums on RCA records and attracted a following in Europe. Some have speculated that The Sidewinders were as popular in Germany for being from Tucson, Arizona as for their music.

After reading Dexter's article, I decided to give it a try. Since I have had the experience of sending out reports that never do result in a QSL card, I shopped carefully for just the right postcards. They must show Arizona in a way that surprised outsiders. Few outsiders know, for instance, that the Saguaro cactus is more often found growing on steep mountainsides than in flat rocky areas.

In March, 2000, I monitored a broadcast of Kol Isreal, beamed directly from the Israeli desert, and another from KTWR, a religious broadcaster from Guam. I dutifully copied down details from both broadcasts and enclosed two international reply coupons - AND my scenic Arizona postcards - with each report.

A month later, I got my first response. Along with the usual postcard format QSL, I found a little card with KTWR, Guam's station logo, a handwritten note from verification signer Janette McSurk. In the note she gave me what amounts to a handwritten QSL ("I believe you did hear the station...") as well as telling me of her fascination with Arizona.

About a month after that, I pulled an envelope out of the mailbox with a Kol Israel return address. It was an official Kol Israel QSL card and broadcast schedule. I didn't notice at first the little card with their station logo, a radio tower with waves emanating from it that looks like a menorah. It said "Thank you for the interesting cards".

Over the next several months, I got a 100 percent response to my reception reports, although, to be

ISRAEL RADIO LA VOIX D'ISRAEL LA BOZ DE ISRAEL ГОЛОС ИЗРАИЛЯ
KOL ISRAEL QSL
LA VOZ DE ISRAEL IZRAEL HANGJA A VOZ DE ISRAEL VOCEA ISRAELULUI
KOL ISRAEL English Service
P.O.B. 1082 · Jerusalem 91010 Israel
Thank you for the interesting card.
with our compliments

fair, I didn't get that many out. Sometimes we all get behind on our radio projects, whatever they may be.

Still I wondered, did the Arizona pictures really do the trick?

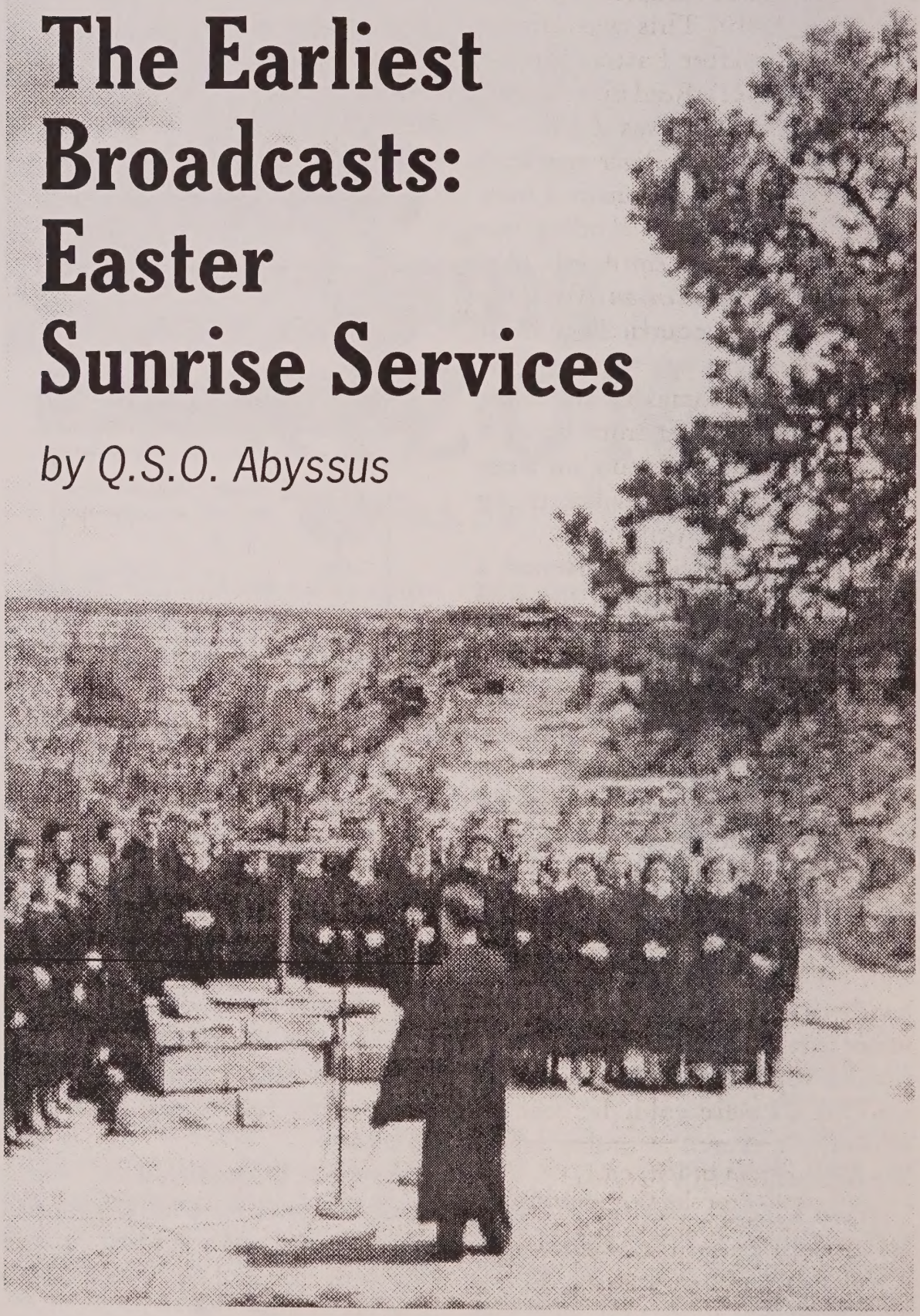
I recently got my first clue. I got a letter from Jack Linonis, a shortwave DXer I correspond with from Pennsylvania. Jack complained to me that he had sent three reception reports over the last year to Kol Israel with no reply.

Maybe a DXpedition to Tombstone, Arizona for a little postcard shopping is in order. It's that cowboy mystique thing, Jack. Knocks 'em dead every time.

Historical Use of Radio on the Colorado River through Grand Canyon Part III:

The Earliest Broadcasts: Easter Sunrise Services

by Q.S.O. Abyssus



If readers will remember from my article "Ripley's Believe It-Or Not!" in the last issue, the Kolb-Goldwater broadcast for Ripley's occurred May 17, 1940. This was almost two months after Easter Sunday, 1940 (March 22). Read on to answer the question: Who was the first to broadcast along the River and from the depths of the Canyon?

As stated in the April 12, 2000 *Williams-Grand Canyon News*, the first Easter Sunrise Service could have been in '02:

"The Rev. Thomas C. Moffat, a Presbyterian minister from Prescott, made a two-day journey on horseback to the Grand Canyon back in the spring of 1902. Moffat secured a room at Bright Angel Lodge for a few days and while there, he offered to hold Easter Sunday services. According to the Williams News, Martin Buggeln, who ran the lodge, gave Moffat use of the establishment's cozy parlor. An improvised choir was soon formed. An early morning service was held, mainly for those who were to leave on the train at 9 o'clock (train service to the rim began the previous September). There was another service at 11 a.m., with sermon. In the newspaper, folks intending to attend services were told the day was 'not ideal for spring bonnets,' meaning conditions were cold. It's unclear as to whether the service was held indoors in the parlor, or outside near Bright Angel Camp (Brad Fuqua, GCN Editor)."

And from *The Coconino Sun* of Friday, March 22, 1940:

"At this most beautiful spot in America, one of the seven wonders of the world, Easter sunrise services have long been traditional. In 1902 the custom started at the Canyon, then it was abandoned for many years, Finally in 1935 the services were revived by Bertrand Cox. Since then they have been held annually".

In 1935, the Arizona State Teachers College (ASTC) "A Cappella Choir" broadcast an Easter Sunrise Service for the first time from the South Rim of the Grand Canyon at a location commonly called "the Shrine of the Ages," described by the *Coconino Sun* as an "open air cathedral near the head of the Bright Angel trail, where, in a natural amphitheater, is a crude altar of stone surmounted by a rough, rugged cross". This annual event, and almost annual Choir performance, was broadcast by KTAR, Phoenix, for over 25 years. In 1950, Sunrise Service co-founder and announcer Howard I. Pyle became Arizona's

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The photograph at left, ca.1944 (NAU Cline Library Fronske Collection, NAU PH.85.3.00.256) shows the Arizona State Teachers College "A Cappella Choir" performing an Easter Sunrise Service.

This is the third article on early radio use in Grand Canyon from The Waiting List, *the quarterly publication of the Grand Canyon Private Boaters Association.*

It ran in the Summer 2000 issue and is reprinted here with the generous permission of the author and of the editor of The Waiting List. *For more on the boat club check out www.gcpba.org.*

youngest governor.

In his regular column, "Opinion 2" (TDN, Sunday April 15, 1984, B3), Howard Pyle explained some background on the broadcasts:

"This was the era of special events broadcasting by radio as contrasted with today's use of satellites for projecting transmissions around the world if need be. Remote control pick ups in those days had to have access to telephone lines and Arizona's Grand Canyon was literally an outer limit in this respect.

"The telephone circuitry into Grand Canyon Village on the south rim was limited to a single line. Since there were several subscribers between Williams and the Village the only way we could be certain the line would remain clear the duration of the Easter Broadcast was to actually disconnect all the telephones involved.

"This required an understanding with the subscribers and a commitment to have the line back in normal service the very soonest. The cooperation of all concerned, especially telephone company service personnel, was faultless throughout all the years we did the service."

The *Coconino Sun* of March 15, 1940 stated that:

"The sunrise service from the banks of the Colorado river at the bottom of the canyon, is assured" ... "and Howard Pyle, announcer for KTAR, will give his description of the Canyon's Easter sunrise while standing on the banks of the turbulent Colorado river, in the depths of the famous gorge. In past years, the description has been given from the rim. A feature of the program will be the choir's singing of the famous Madrigal, 'Out of My Soul's Depths to Thee,' by Campion."

The following week the *Sun* reported:

"Richer in dramatic symbolism than ever before, the services will feature for the first time a broadcast from the bottom of the canyon. Howard Pyle will give a special canyon description from Phantom ranch located at the very depth of the globe's greatest chasm. This spot is more than a mile below the Eolisic (sic) schist which is a visible marker of the earth's earliest yesterdays. Each year Mr. Pyle has given a description of the 'indescribable' canyon sunrise and this year will be stationed '1000 feet below the beginning of time,' at a point a short distance from the spot where the crystal clear Bright Angel creek converges with the muddy water of the turbulant (sic) 'mighty Colorado.'"

One week later the *Sun* ran this update:

"College Choir May Broadcast For Ripley --- 'Believe It Or Not' Program Planned Inside Canyon --- If satisfactory arrangements can be made, the nationally famous A Cappella choir of Flagstaff State College will take part in a 'Believe It Or Not' broadcast on Friday May 12 (sic). Besides the technical difficulties which will have to be solved, it will be necessary to transport the entire 40 voice group by donkey-back to the very bottom of the canyon. This will be the first time that a music broadcast has originated in the canyon itself."

The April 5,1940 *Sun* continued the story:

"'Believe It Or Not' Program Includes Choir --- Broadcast Will Tax Ingenuity Of Engineers --- James J. Lynch, genial, competent publicity director of the local college, reported yesterday that everything looks favorable for the choir to take part. For the first time in the history of radio, Mr. Lynch says, three means of communication will be used. They are telephone, short-wave and long-wave. With this innovation, radio engineers will be taxed to the limit to put the program over in good order. Watch for the date! It is believed the time will be May 17, but there has been no official confirmation."

The Coconino Sun, April 19, 1940:

"College Choir Starts Sunday On State Tour --- Tentative plans also call for a second home appearance on Mother's day Sunday, May 12, and a projected national broadcast over Robert Ripley's 'Believe It Or Not,' program from the bottom of Grand Canyon, sometime around the middle of May."

The Coconino Sun, May 3, 1940:

"Choir Returns From Successful Spring Tour --- Nothing more has been heard from the Ripley 'Believe-It-or-Not' Grand Canyon broadcast in which the choir was to appear sometime in May."

Two weeks later the the *Sun* had it figured out:

"Ripley's 'Believe It Or Not' Broadcast At Canyon Tonight: Program To Be Split Between Bottom Of Gorge And South Rim --- Time, 7:30 --- By MRS. J. A. Shepherd, Sun Correspondent --- Mr. Ripley will tell of watching Emory (sic) Kolb pilot a small boat through one of the dangerous rapids of the river, and there will be other highly interesting features. Originally it had been tentatively planned to have the famous A Cappella choir of Flagstaff State college, which annually broadcasts an Eastern (sic) sunrise service from the South Rim, take part on the program, but it was later decided to have the all-Indian band from the Santa Fe railway shop at Winslow take part instead ... Because of the difficulties involved (the broadcast being the first involving a national hookup from the bottom of Grand Canyon) a great deal of labor, engineering and preparations have been necessary ... Twenty-five technicians, engineers, etc., were brought here from New York and Los Angeles, while representatives from the broadcasting company and the telephone company and local men, representing the Park Service, the Fred Harvey company, were called into service, to see that no point was overlooked. It required 25 of the Fred Harvey 'college trained' mules to serve the group as saddle and pack animals ... Ripley makes a quick trip by mule back to the river's edge, to witness the most dramatic part of the program, the passage of a boat, in which the well-known Emory (sic) Kolb will be piloting. Mr. Kolb has had more experience with the Colorado river than any other person. In the boat with Mr. Kolb, will be Announcer Goldwater, who will be describing the sensation of shooting a rapids of the most treacherous river

in the world in a small boat. This will be done through a short wave transmitter. As they pass the point where Ripley stands, he will give his impression of the stunt."

So, who was actually first, or were they both? *The Coconino Sun* had a funny habit of reporting planned events in detail prior to their occurrence. After the fact, they did not usually report the event, the facts, or the corrections. A draft press release from ASTC for 1941 made no mention of the Choir being at the River in 1940 for Ripley's. However, it did mention the possibility of another Easter broadcast from the River, which printed press releases omit: "This year, for the second time, the description of the canyon will be made from the edge of the turbulent Colorado River, a vertical mile below the rim of the canyon where the other parts of the program will be presented. The description last Easter was the first broadcast ever made from the depths of the great gorge." A 1942 draft press release indicates a possible change of venue, which I have not yet researched:

"A sunrise description from a new observation post, the Indian Watchtower at Desert View, will be a feature of this year's service, according to preliminary plans announced by Howard Pyle, program director for KTAR, who will make the description. In former years the description has been given a short distance west of Grand Canyon Village, and, for the past two years, from the edge of the Colorado River, a mile below the rim" (NAU Cline Library Special Collections and Archives, Vertical File "NAU - Choir"). As previously mentioned, I have yet to find a confirmation of this second Easter broadcast from the River.

All that can be concluded at this time is that: the Easter Sunrise Service in 1935 was probably the first national radio broadcast from the Grand Canyon; the Easter Sunrise Service in 1940 was probably the first national radio broadcast from the edge of the Colorado River; and the Ripleys' "Believe It Or Not Broadcast" was probably the first national radio broadcast from a boat on the Colorado River.

It's about time for this radio talk show to close. But there are a couple of brief notes to make. In 1949, the now Arizona State College at Flagstaff (name change in 1945) changed the name of their singing group to "The Shrine of the Ages Choir" (renamed the University Chorale in 1983, and back to the Shrine of the Ages Choir in 1999). And in 1952, the Shrine of the Ages Chapel Corporation was approved, and plans for erection of a chapel for persons of all faiths were made. The site will be in the area of the annual Easter Sunrise Service, which affords practically an unlimited view of the Grand Canyon. In this connection, Governor Howard Pyle of Arizona, has written: "The Shrine of the Ages site appeals to me especially since here is where we have long raised the Canyon to a pinnacle of inspirational value. This is the ground that on the occasion of the third year of the Easter services was

beautifully dedicated in a ceremony that was heard round the world. It was undoubtedly one of our best broadcasts, so naturally I am eager to see expansion of its devotional possibilities" (Shrine of the Ages Chapel, n.d., NAU Cline Library Archives, Eastburn Collection).

The Doheny Expedition

Another early use of radio in Grand Canyon may have turned up. In the Fall 2000 issue I reported on the 1923 Birdseye expedition that carried a radio; now it is possible that a radio was used in the following year, 1924, on another trip.

Michael Quinn, Grand Canyon National Park Museum, sent me a file of the accompanying photo (above, file reconfiguration by Chris Muhienfeld, NAU Cline Library) of a member (could be Fred V. Shaw or Elvin Scoyen) of the 1924 Doheny Expedition to Havasu Canyon looking for dinosaur petroglyphs. A sign on the side of the radio, perched on a blanket, advertises: "CR. Parker, Authorized Radiola Dealer, 1216 So. Hill St., Los Angeles Calif" The "definitive" report of this exploration may be found in *The Doheny Scientific Expedition to the Hava Supai Canyon, Northern Arizona, October and November, 1924*, Compliments of Oakland, Museum, Oakland, California, Sponsor and Patron, E.

L. Doheny.

This exploration deserves an article of its own, but I will quote a bit from Samuel Hubbard's "Introduction": "The Doheny Scientific Expedition to the Hava Supai Canyon in Northern Arizona, was organized for the express purpose of bringing before the scientific world, certain discoveries relating to pre-historic man made by the writer, in three previous visits to this isolated region. It so happened that Mr. E.L. Doheny of Los Angeles, who sponsored this expedition, had visited this canyon as a young prospector, in 1879. He and his party are among the first white men to venture into this wild place, and the hardships they endured, and the dangers they faced were made apparent by the fact that one of their party, a sailor named Mooney, lost his life while trying to descend below the fall which to this day bears his name." James, or Daniel W., Mooney (once a sailor who grew weary of that life, he settled in Prescott and became a miner) lost his life here probably in 1880 (Nancy Brian, *River to Rim*, 1992, p111). After 1876, "Doheny went west to search for silver and gold, first traveling to the San Juan mining district of southwestern Colorado." Sometime in the late 1870s, Doheny moved to Prescott, Arizona. (Dan La Botz, *Edward L. Doheny: Petroleum, Power, and Politics in the United States and Mexico*, 1991, 4).

These are not the only connections Doheny has to the Canyon. "Doheny left the mine fields of New Mexico In about 1890." In 1892, Doheny was in Los Angeles and saw a wagon pass by dripping some black ooze. It was brea, the Spanish word for tar. Doheny, knowing that where there was tar there should be oil, and his partner "found a tar pit near Second Street and Glendale Boulevard. They leased the land, and in what was then the middle of residential Los Angeles, they literally dug for oil", the first well in Los Angeles city limits. At that time, the world was still in the "Kerosene Age." In 1897, Doheny and his partners "carried out some successful experiments to substitute oil for coal in the railroad locomotives of the Atchison, Topeka, and Santa Fe Railroad. The successful conversion of railroad locomotives to the use of petroleum fuel not only gave Doheny a growing market for his product, but it also opened up a new era of petroleum-fueled vehicles." (La Botz, 4, 10, 11, 12, 14).

Robert Brewster Stanton completed his railroad survey trip through the Grand Canyon in 1890. Organized by Frank Mason Brown and others, the Denver, Colorado Canon and Pacific Railroad's main purpose was to ship coal from Colorado to Southern California. Brown's support for the project was extremely important, but he drowned in 1889 on the survey's first attempt. However, the deciding factor in why the railroad was never built is that Doheny, among others, transformed the fuel industry with a successful strategy of conversion to petroleum, making shipments of coal west to California virtually unnecessary.

Filament Current .06 amp. Mutual Conductance 337 Micromhos at 40 volts plate and O grid potential.

Cut shows actual size of tube 3 inches high

Type C-299 Price $6.50

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The C-299 has practically the same operating characteristics as the previous Cunningham Amplifier, type C-301. Due to the low distributive capacity of the elements it is an excellent radio-frequency amplifier. When used as an audio-frequency amplifier the output from two steps is sufficient for the operation of a small loud speaker.

Bulletin No. 2-Q describes this new tube in full and gives the necessary data regarding rheostats, battery voltages, transformers, etc. A free copy will be sent to you by return mail, upon receipt of your request at either of the addresses given below Complete instruction sheet for its care and operation is packed with each of these New Cunningham Dry Battery Tubes, type C-299.

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THE RME-9D RECEIVER

by Harry Hyder

The depths of the depression in 1932 did not seem to be a propitious time to start a new company, but E.G.Schalkhauser and R.M.Planck decided to defy the odds. They started Radio Manufacturing Engineers (RME) in their hometown of Peoria, Illinois. Its purpose was to manufacture communications receivers for radio amateurs, sets that would have all the most modern features but sell for a moderate price. These features would include band spreading, band switching, a calibrated dial, a crystal filter and signal strength meter. Quite an order. In 1932 no receiver on the market had all of these features.

The first product of RME was the RME-9. Very few were made and little is known about it. I do not believe that any survive.

The RME-9D was introduced in 1934. It had all of the features listed above. It sold for $112.50 and was a moderate success. Its schematic is shown on page 16. Frequency coverage was .54 to 22 MHz in five bands, Band spread was electrical, which hams have always preferred to mechanical bandspread.

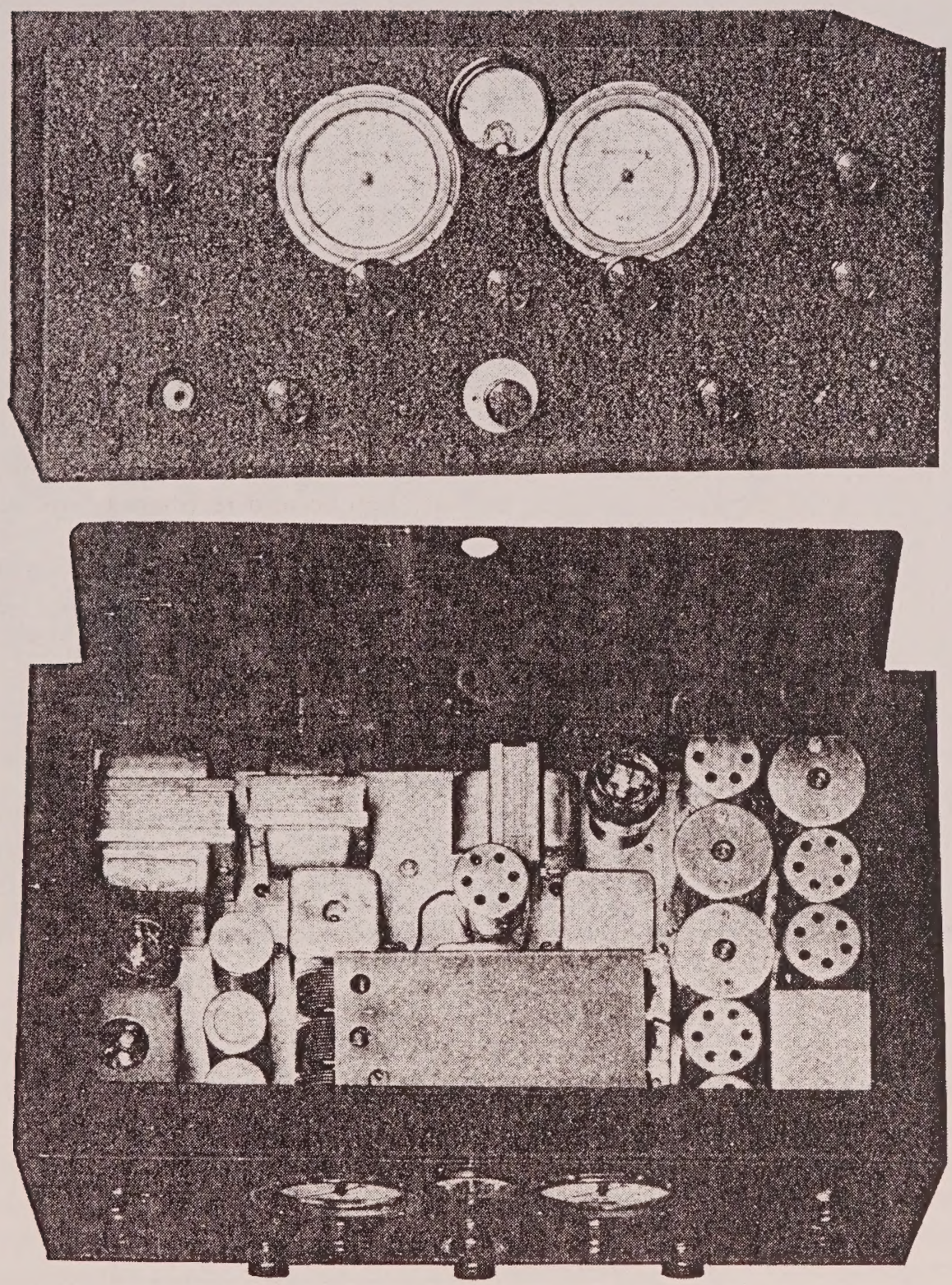
The set had a tuned radio-frequency amplifier, separate mixer and oscillator tubes, two if stages, diode detector, BFO, audio and rectifier, a total of nine tubes.

In the early 1930s, the ten meter band (28-30 MHz) saw little use by hams and was considered good only for local work. By 1934, however, the sun spot cycle was approaching maximum, and hams were learning that they could work lots of DX when the band was "open". Some receivers did not cover that band, nor did the RME-9D. In later production units the ten meter band was added and the broadcast band dropped.

BY 1935 competition was increasing. Hallicrafters was introducing receivers having most of the features of the RME set. On the west coast Breting and Patterson were both marketing communications receivers for hams.

RME decided that it was time to introduce a new model. The result was the RME-69

The differences between the RME-9D and the RME-69 were largely cosmetic. New, larger dials were used, much more easily read. The circuit layout was very little changed. The tubes were changed

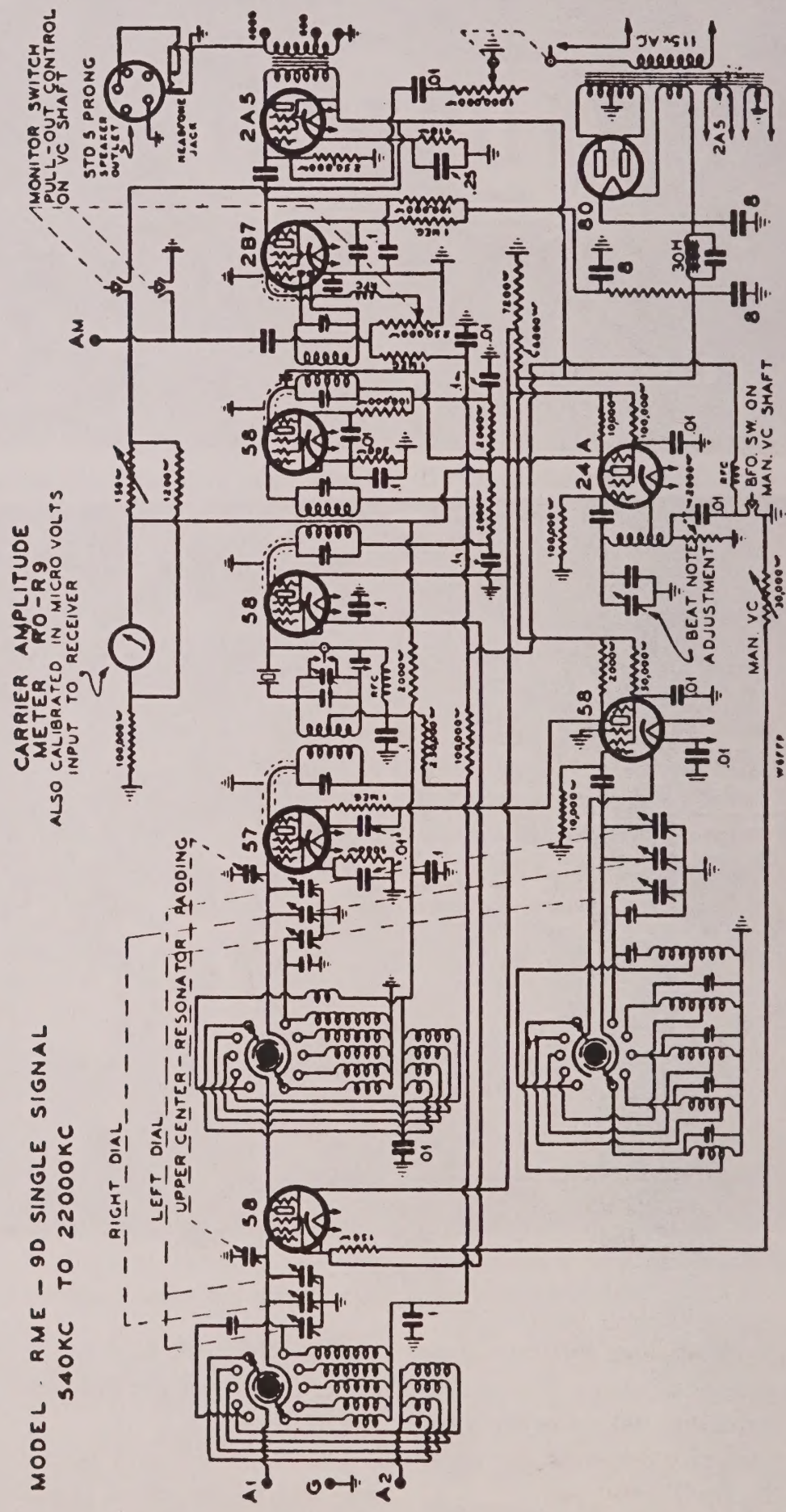


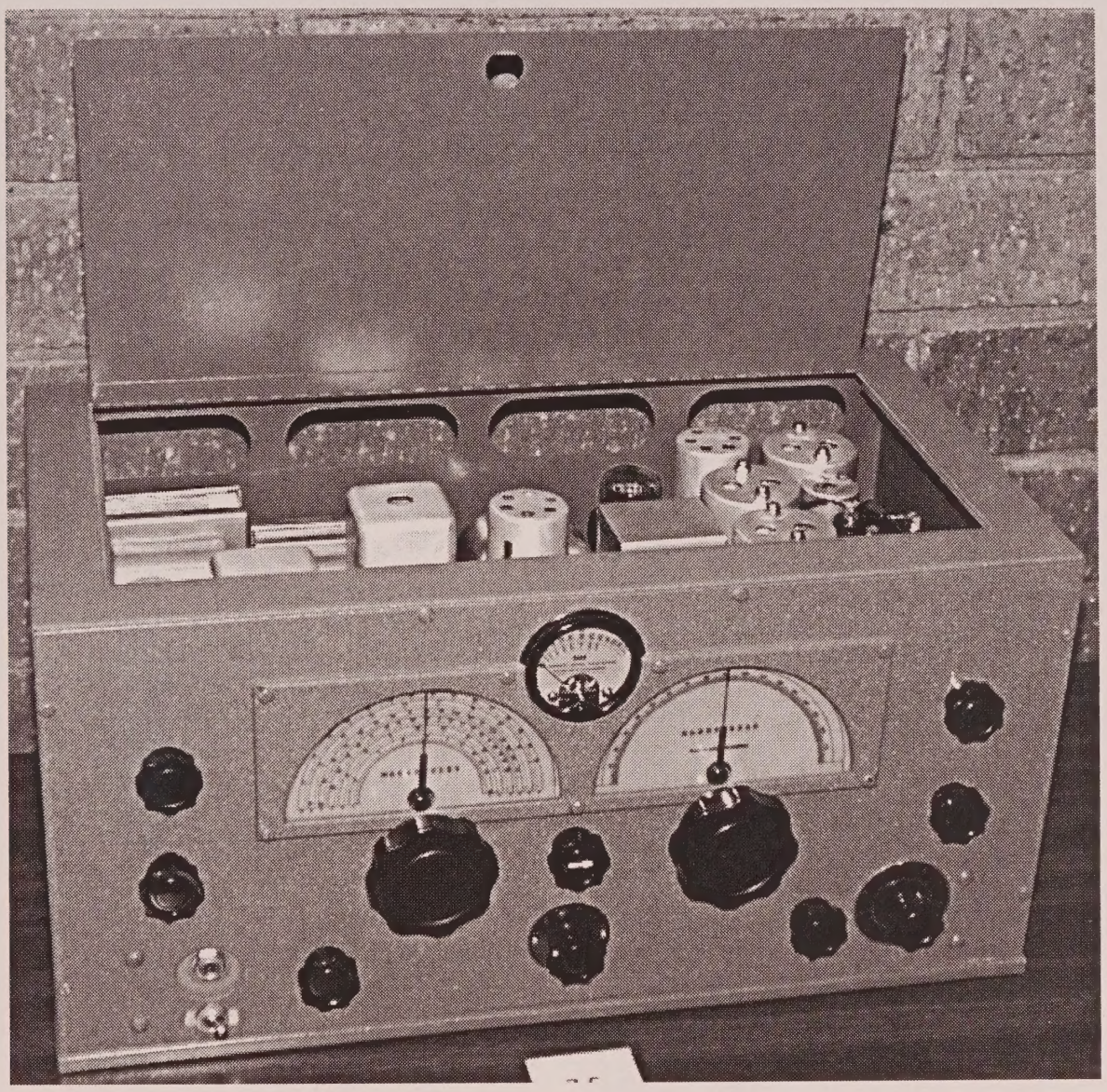
RME-90

from 2.5 volt heater types to their 6.3 volt glass equivalents. The photographs of the internal views show the strong similarity between the older set and the RME-69.

The RME-69 had both the ten meter band and the broadcast band, .55 to 32 MHz.

The RME-69 sold very well and was one of the most popular ham


MODEL . RME - 9D SINGLE SIGNAL
540KC TO 22000KC
CARRIER AMPLITUDE METER RO-R9
ALSO CALIBRATED IN MICRO VOLTS INPUT TO RECEIVER
MONITOR SWITCH PULL-OUT CONTROL ON VC SHAFT
STD 5 PRONG SPEAKER OUTLET
HEADPHONE JACK
RIGHT DIAL
LEFT DIAL
UPPER CENTER - RESONATOR - PADDING
BEAT NOTE ADJUSTMENT
BFO. SW. ON MAN. VC SHAFT
MAN. VC
2A5
2B7
58
57
24A
80
30H
115V AC
A1
G
A2
AM



RME-69

receivers of the latter half of the 1930s.

In 1938 another model was introduced, the RME-70. The chief difference was that metal tubes were used, and a noise blanker added. The appearance of the dials was changed slightly.

Production of ham receivers was discontinued during World War II, of course.

After the war, new models were introduced. These were never as popular as the pre-war sets. My own theory for this is that all RME postwar sets used mechanical rather than electrical bandspread. Mechanical bandspread, as used in many RCA, Breting, McMurdo Silver and and Patterson sets, has never been popular with hams. RME's chief competitors, National, Hammarlund and Hallicrafters all used electrical bandspread.

In 1953 RME became part of Electro-Voice and in 1963 production of RME receivers was stopped.

SPARK TRANSMISSION

by
Harry Hyder

For the first two decades of radio history, spark was the most used mode of transmission. Even after vacuum tube transmitters became common, spark lingered on in commercial use. Well into the 1930s some ships were still equipped with spark transmitters. By international agreement, the use of spark was to end by 1940.

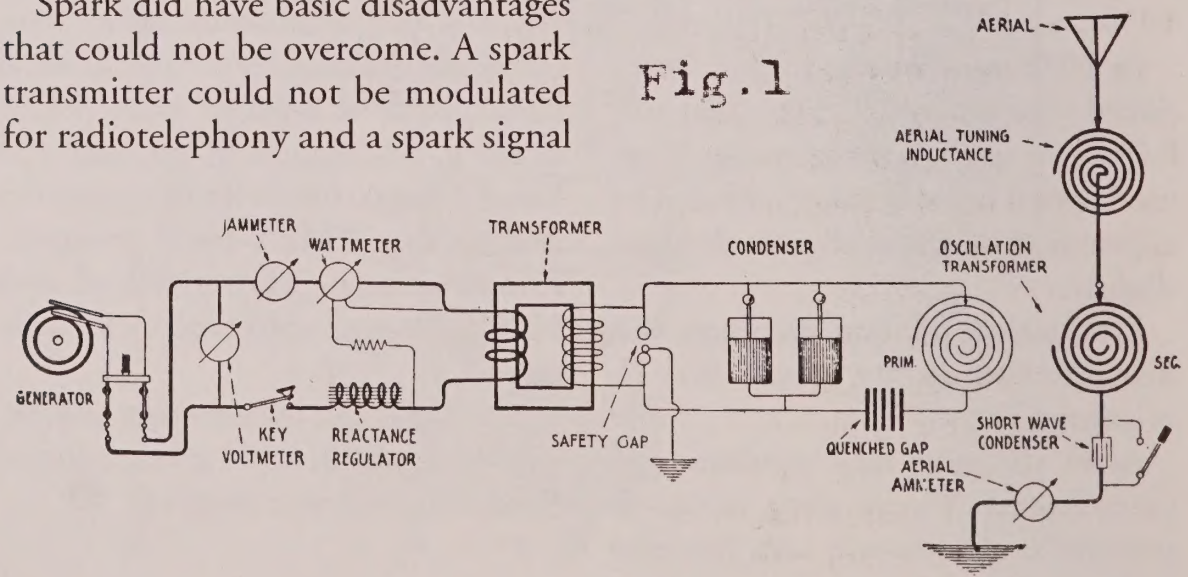
We tend to think of spark as a rather crude technique. This is not true; spark was well developed and commercial spark transmitters were designed by engineers who understood the principles of spark.

Spark did have basic disadvantages that could not be overcome. A spark transmitter could not be modulated for radiotelephony and a spark signal took up more spectrum space than did a continuous wave signal.

Fig, 1 is a simplified schematic diagram of a spark transmitter.

An ac generator energizes the primary of the high-voltage transformer. The secondary voltage charges the condenser (capacitor). Near the peak of the ac waveform the spark gap breaks down, dumping the energy stored in the condenser into the primary of the oscillation transformer. The oscillation transformer, antenna inductances and the antenna itself all form a resonant circuit, which "rings" at its resonant frequency.

Fig. 1



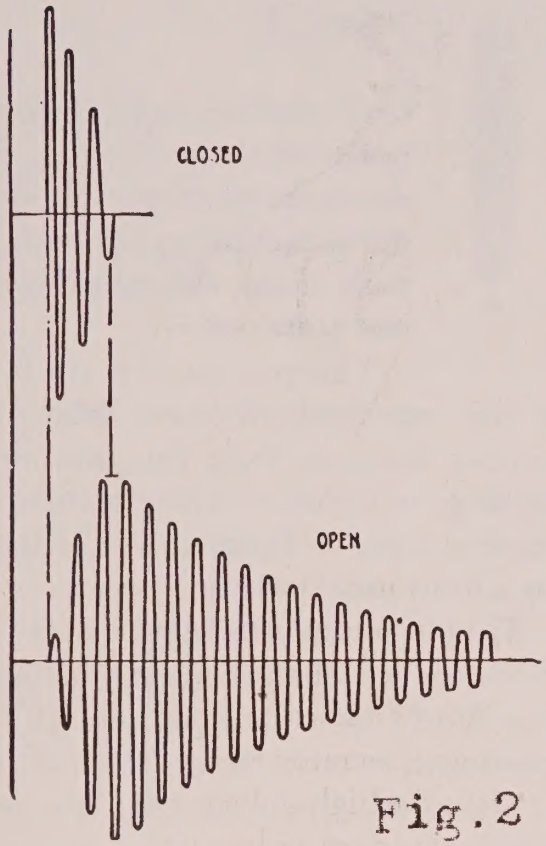


Fig.2

Due to circuit resistance, both ohmic in the oscillation transformer and inductances, and the radiation resistance of the antenna itself, the ringing oscillations die out. All of the energy initially in the condenser has now been dissipated in either circuit losses or antenna radiation. Oscillations in the primary and secondary of the oscillation transformer are shown in fig. 2. Since this occurs on both positive and negative peaks of the ac waveform, the "tone" of the radiated signal is twice the frequency of the ac generator.

A state-of-the-art spark transmitter (for 1915) was the American Marconi P-4, shown in fig.3. This was a 2 kW unit designed for shipboard use.

Prime power for the set was a 140 volt 500 Hz alternator, driven by a 4 HP dc motor operating from ship's

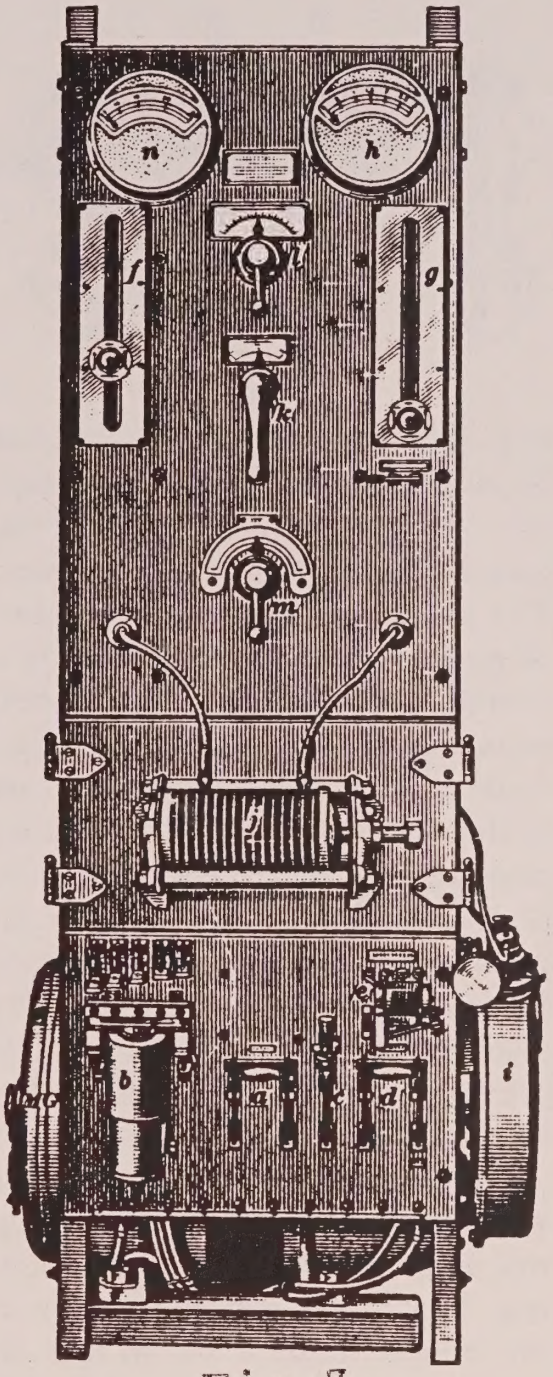


Fig.3

power. The output of the alternator was stepped up to 12,500 volts to charge the condensers. The condensers were Leyden jars, glass bottles copper plated on their inner and outer surfaces. Each jar had a capacitance of about 2,000 pF. There were six jars in parallel.

The spark gap was of the "quenched" type, a German inven-

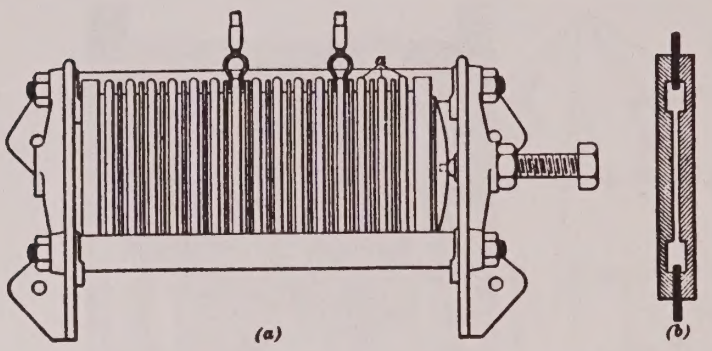


Fig.4

tion. The gap was called quenched because the spark quenched very rapidly after the initial gap breakdown, greatly improving the efficiency. The quenched gap was a number of gaps in series, each gap having a breakdown voltage of about 1,500 volts. The operator, by means of clips, could select the number of gaps in use so that the breakdown occurred very close to the peak of the ac waveform. A quenched gap assembly and an individual gap are shown in fig.4. Each gap consisted of flat circular plates separated about .015 inch. The gaps were insulated from each other by mica spacers.

The P-4 also had a rotary gap. This was for use when the quenched gap was down for maintenance or cleaning. The rotary gap was mounted on the alternator shaft, so that its sparks could be made synchronous with the ac waveform, sparking on both positive and negative peaks of the cycle. Fig. 5 shows the rotary gap. While the quenched gap was essentially silent, the rotary gap was quite noisy.

The oscillation transformer was made of heavy brass or copper strap, as were the antenna loading inductances. These had taps for several pre-set frequencies, selected by a front panel switch.

The P-4 set and similar were manufactured in large quantities during the World War One period. RCA continued to manufacture them after it absorbed American Marconi in 1919.

High power shore stations essentially followed the same plan as the P-4. Of course their components were much larger. The development of high power vacuum tubes following the war doomed further development of spark, but spark transmitters lingered on in use for many years.

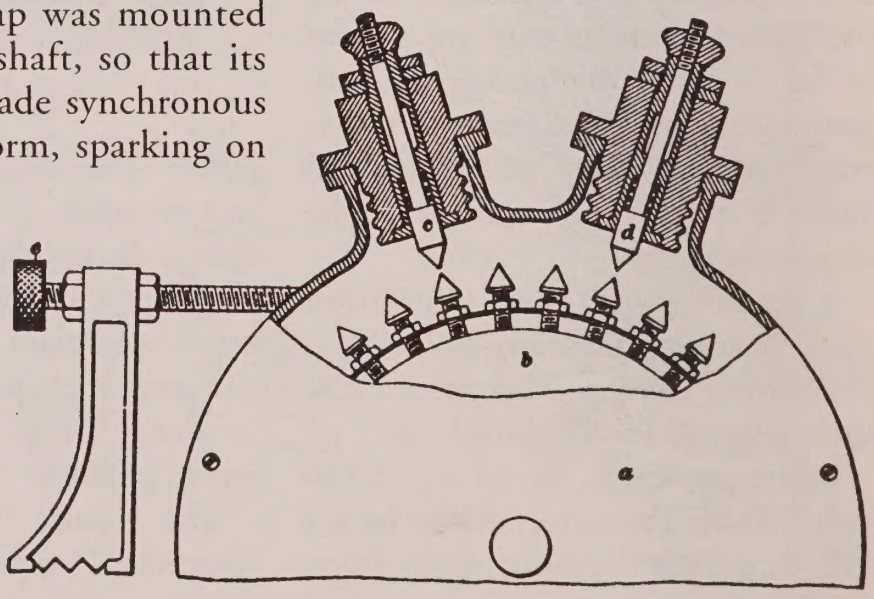


Fig.5